

WHAT IS CLAIMED IS:

1. An illumination device for illuminating a liquid crystal panel having a frame area and an effective display area surrounded by the frame area, the illumination device comprising:

a light source for emitting light;

an optical conductor including a light incident surface on which light emitted by the light source is allowed to be incident, a light output surface from which the light is allowed to be output, and a projection projecting from the light incident surface; and

a light scattering section for scattering light, the light scattering section including an engaging portion which is engageable with the projection;

wherein the optical conductor and the light scattering section are located such that an end of the projection of the optical conductor is located outside the effective display area of the liquid crystal panel.

2. An illumination device according to claim 1, wherein the projection includes a thin plate portion which is shaped like a thin plate.

3. An illumination device according to claim 1, wherein the projection is located closer to the light output surface than a bottom surface of the optical conductor facing the light output surface.

4. An illumination device according to claim 1, wherein the light scattering section includes a plate-like light scattering section.

5. An illumination device according to claim 1, wherein:
the light scattering section includes a first portion and a second portion which is thinner than the first portion, and the engaging portion has a step formed by the first portion and the second portion; and
the projection is located so as to overlap with a surface of the second portion.

6. An illumination device according to claim 1, wherein the light source includes a linear light source.

7. An illumination device according to claim 5, wherein a surface of the first portion of the light scattering section, a surface of the projection of the optical conductor, and the light output surface of the optical

conductor are substantially in an identical plane with each other.

8. An illumination device according to claim 1, wherein the light source is structured such that an area of a portion of the light source facing the light incident surface of the optical conductor is larger than an area of a portion of the light source facing the light scattering section.

9. An illumination device according to claim 8, wherein the light source has an elliptical cross-section.

10. An illumination device according to claim 9, wherein the light source is located such that a longer axis direction of the elliptical cross-section is substantially perpendicular to a direction vertical to the light incident surface of the optical conductor.

11. An illumination device according to claim 8, wherein the light source is a fluorescent tube having at least one bending portion, and at least one portion of the fluorescent tube is processed to have an elliptical cross-section.

12. An illumination device according to claim 11, wherein:

the light source is provided with a first electrode to which a first voltage is allowed to be applied and a second electrode to which a second voltage lower than the first voltage is allowed to be applied; and

the at least one portion of the fluorescent tube which is processed to have an elliptical cross-section is located closer to the first electrode than the second electrode.

13. An illumination device according to claim 1, wherein the light source includes a fluorescent tube processed to have an elliptical cross-section and an electrode which is not processed to have an elliptical cross-section.

14. An illumination device according to claim 10, wherein the ratio of the length of a longer axis of the elliptical cross-section with respect to the length of a shorter axis of the elliptical cross-section is 0.6 or greater and less than 1.0.

15. An illumination device according to claim 14, wherein:

the fluorescent tube is processed to have an elliptical cross-section; and

with respect to the fluorescent tube before being processed, the post-processing fluorescent tube has a voltage at the start of lighting increased by more than 0% and +15% or less, has a driving voltage increased by more than 0% and +10% or less, and an average outer surface luminance changed by within $\pm 15\%$ inclusive.

16. An illumination device according to claim 5, wherein an end of the second portion of the light scattering section is located inside the light incident surface and is in contact with the optical conductor.

17. An illumination device according to claim 1, further comprising an optical sheet located on the light output surface.

18. An illumination device according to claim 17, wherein the optical sheet includes a combination of a low turbidity diffusion sheet and a high turbidity diffusion sheet.

19. An illumination device according to claim 17, wherein the optical sheet includes a combination of a selective polarization reflective section and a high turbidity diffusion sheet.

20. An illumination device according to claim 1, further comprising:

a fixation section located below the light incident surface of the optical conductor; and

a reflection section for reflecting light which is output from a bottom surface of the optical conductor which faces the optical output surface of the optical conductor, the reflection section being located between the fixation section and the optical conductor.

21. An illumination device according to claim 20, wherein a surface of the reflection section and the bottom surface of the optical conductor are in contact with each other below the light incident surface of the optical conductor.

22. A liquid crystal display apparatus, comprising:

an illumination device according to claim 1; and

a transmissive liquid crystal panel for performing display by allowing light emitted by the illumination device to transmit therethrough or shielding the light.

23. A liquid crystal display apparatus, comprising:

an illumination device according to claim 1; and

a transmissive liquid crystal panel having a reflection function for performing display by allowing light emitted by the illumination device to transmit therethrough or shielding the light, and also performing display by reflecting external light.